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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/673,202	12/04/2000	Shigehiro Shimada	KOIK-T0215	2182

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EXAMINER	
CASCHERA, ANTONIO A	
ART UNIT	**PAPER NUMBER**
2676	15

DATE MAILED: 03/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/673,202	Applicant(s) SHIMADA ET AL.	
	Examiner Antonio A Caschera	Art Unit 2676	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-6 and 8-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-6 and 8-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 December 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. Receipt is acknowledged of a request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e) and a submission, filed on 1/2/2004.

Priority

2. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in the pending application.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 3-6 and 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kato (JP10-040395) in view of Ogura (U.S. Patent 6,343,099 B1).

The applied reference, Ogura, has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of

invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(l)(1) and § 706.02(l)(2).

In reference to claims 1 and 6, Kato discloses an object outline processing method where outlines of objects, including curved outlines, are extracted using curve data points of 2 reference frames to produce, the same curve data points in intermediate frames, onto a display (see paragraph 31, lines 14-18 of paragraph 30, "solution" section of abstract and Figure 6). Kato also discloses using certain curve data points of the outline of an object of reference frames F1 and Fn to create the object in intermediate frames so that certain curve data points, An and Nn, correspond in all the frames F1-Fn (see paragraphs 31-35 and Figures 5-7). Kato does not explicitly disclose determining analogousness between a first image portion including a correspondence point identified in the first frame and a second image portion including the correspondence point in the second frame by determining an absolute value sum of differences of respective pixel values within the first image portion and second image portion. Ogura discloses a method and apparatus for detecting motion vectors between a first and second frame of video

utilizing pixel data (see lines 1-3 of abstract). Ogura discloses the method to analyze a first subset of pixel values in a first frame block of data and then sample the pixel values from this block of data along with a second block of data, from a second frame, at the positions determined by the analyzation (see column 2, lines 59-67). Ogura further discloses the sampling to comprise of determining the maximum and minimum pixel values in each block of data, calculating an absolute sum of differences of maximum and minimum pixel values and determining a match by observing the magnitude of the absolute sum of differences (see column 5, lines 35-67). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the data block matching techniques of Ogura with the object outline processing techniques of Kato in order to provide a more accurate frame-by-frame outline detection scheme by eliminating mismatches of features between first and second frame data blocks (see column 2, lines 45-47 of Ogura).

In reference to claims 3 and 8, Kato and Ogura disclose all of the claim limitations as applied to claims 1 and 6, respectively above, in addition, Kato discloses the start reference frame F1 and end reference frame being Fn (see lines 4-6 of paragraph 31). Kato also discloses using a DDA algorithm to interpolate curve data points, based on those points of reference frames F1 and Fn, between data midpoints K1-Kn of an object in intermediate frame Fk (see paragraphs 35-36 and Figure 7).

In reference to claims 4 and 5, Kato and Ogura disclose all of the claim limitations as applied to claim 1 above, in addition, Kato discloses using certain curve data points of the outline of an object of reference frames F1 and Fn to create an object in intermediate frames so that

certain curve data points, An and Nn, correspond in all the frames F1-Fn (see paragraphs 31-35 and Figures 5-7).

In reference to claims 9 and 10, Kato and Ogura disclose all of the claim limitations as applied to claim 6 above, in addition, Kato discloses using certain curve data points of the outline of an object of reference frames F1 and Fn to create an object in intermediate frames so that certain curve data points, An and Nn, correspond in all the frames F1-Fn (see paragraphs 31-35 and Figures 5-7).

In reference to claim 11, Kato discloses an auxiliary memory which stores various programs defining the data processing method (see paragraph 17 and #308 of Figure 1). Kato also discloses an object outline processing method where outlines of objects, including curved outlines, are extracted using curve data points of 2 reference frames to produce, the same curve data points in intermediate frames, onto a display (see paragraph 31, lines 14-18 of paragraph 30, "solution" section of abstract and Figure 6). Kato discloses using certain curve data points of the outline of an object of reference frames F1 and Fn to create the object in intermediate frames so that certain curve data points, An and Nn, correspond in all the frames F1-Fn (see paragraphs 31-35 and Figures 5-7). Kato does not explicitly disclose determining analogousness between a first image portion including a correspondence point identified in the first frame and a second image portion including the correspondence point in the second frame by determining an absolute value sum of differences of respective pixel values within the first image portion and second image portion. Ogura discloses a method and apparatus for detecting motion vectors between a first and second frame of video utilizing pixel data (see lines 1-3 of abstract). Ogura discloses the method to analyze a first subset of pixel values in a first frame block of data and then sample the

pixel values from this block of data along with a second block of data, from a second frame, at the positions determined by the analyzation (see column 2, lines 59-67). Ogura further discloses the sampling to comprise of determining the maximum and minimum pixel values in each block of data, calculating an absolute sum of differences of maximum and minimum pixel values and determining a match by observing the magnitude of the absolute sum of differences (see column 5, lines 35-67). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the data block matching techniques of Ogura with the object outline processing techniques of Kato in order to provide a more accurate frame-by-frame outline detection scheme by eliminating mismatches of features between first and second frame data blocks (see column 2, lines 45-47 of Ogura).

4. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kato (JP10-040395), Ogura (U.S. Patent 6,343,099 B1) and further in view of Ito et al. (U.S. Patent 5,966,141).

In reference to claims 12 and 13, Kato and Ogura disclose all of the claim limitations as applied to claims 3 and 8 respectively above. Although Kato discloses using certain curve data points of the outline of an object of reference frames F1 and Fn to create the object in intermediate frames so that certain curve data points, An and Nn, correspond in all the frames F1-Fn (see paragraphs 31-35 and Figures 5-7), neither Kato nor Ogura explicitly disclose determining a length of a round portion of the curve in the first frame and a length of a round portion of the curve in the third frame. Ito et al. discloses a system and method creating an animation of shapes whereby the contours of shapes are matched and corresponded to each other between different frames (see lines 1-4 of abstract). Ito et al. also discloses the system

comprising a corresponding contour detector that determines corresponding contour pairs in adjacent key frames (see column 31, lines 48-50). Ito et al. discloses the key frames to be frames comprising a topological change to an object (see column 5, lines 38-40). Ito et al. discloses the contour detector calculating arc lengths of upper and lower contours of an object in each key frame, F0 and F1 (see column 32, lines 55-58 and column 33, lines 34-36). Ito et al. further discloses determining other paired points using interpolation, defined by the function U(x), between the endpoints of the arc lengths (see column 33, lines 48-53 and #x0, x1 of Figure 38). Note, the office interprets the corresponding contour detection methods of Ito et al. to inherently disclose calculating a, "sampling interval" when performing interpolation as the interpolation function performs sampling within a certain range of points. It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the contour correspondence determining techniques of Ito et al. with the data block matching techniques and the object outline processing techniques of Kato and Ogura in order to provide correctly shaped objects for automatically created intermediate frames generating these frames using relatively easy hardware and simple user operation (see column 2, lines 41-47 of Ito et al.).

5. Claims 1, 3-6 and 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kato (JP10-040395) in view of Matsugu et al. (U.S. Patent 6,453,069 B1).

In reference to claims 1 and 6, Kato discloses an object outline processing method where outlines of objects, including curved outlines, are extracted using curve data points of 2 reference frames to produce, the same curve data points in intermediate frames, onto a display (see paragraph 31, lines 14-18 of paragraph 30, "solution" section of abstract and Figure 6). Kato also discloses using certain curve data points of the outline of an object of reference frames F1

and Fn to create the object in intermediate frames so that certain curve data points, An and Nn, correspond in all the frames F1-Fn (see paragraphs 31-35 and Figures 5-7). Kato does not explicitly disclose determining analogousness between a first image portion including a correspondence point identified in the first frame and a second image portion including the correspondence point in the second frame by determining an absolute value sum of differences of respective pixel values within the first image portion and second image portion. Matsugu et al. discloses an image processing method for precisely and automatically detecting a specific image extraction region from an input image (see lines 1-3 of abstract). Matsugu et al. also discloses region matching processing of areas within a standard model image and a target image whereby a contour line is extracted based upon the absolute sum differences of RGB pixel values in the respective regions (see column 26-27, lines.56-23). Note, the office interprets the region matching processing of Matsugu et al. to perform substantially similar processing as the, determining of analogousness of first and second image portions based upon absolute sum differences of applicant's claims. It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the region matching processing of Matsugu et al. with the object outline processing techniques of Kato in order to provide a more accurate frame-by-frame outline detection scheme by stably, automatically and economically recognizing objects without being influenced by differences of the image size and/or position (see column 3, lines 10-15 of Matsugu et al.).

In reference to claims 3 and 8, Kato and Matsugu et al. disclose all of the claim limitations as applied to claims 1 and 6, respectively above, in addition, Kato discloses the start reference frame F1 and end reference frame being Fn (see lines 4-6 of paragraph 31). Kato also

discloses using a DDA algorithm to interpolate curve data points, based on those points of reference frames F1 and Fn, between data midpoints K1-Kn of an object in intermediate frame Fk (see paragraphs 35-36 and Figure 7).

In reference to claims 4 and 5, Kato and Matsugu et al. disclose all of the claim limitations as applied to claim 1 above, in addition, Kato discloses using certain curve data points of the outline of an object of reference frames F1 and Fn to create an object in intermediate frames so that certain curve data points, An and Nn, correspond in all the frames F1-Fn (see paragraphs 31-35 and Figures 5-7).

In reference to claims 9 and 10, Kato and Matsugu et al. disclose all of the claim limitations as applied to claim 6 above, in addition, Kato discloses using certain curve data points of the outline of an object of reference frames F1 and Fn to create an object in intermediate frames so that certain curve data points, An and Nn, correspond in all the frames F1-Fn (see paragraphs 31-35 and Figures 5-7).

In reference to claim 11, Kato discloses an auxiliary memory which stores various programs defining the data processing method (see paragraph 17 and #308 of Figure 1). Kato also discloses an object outline processing method where outlines of objects, including curved outlines, are extracted using curve data points of 2 reference frames to produce, the same curve data points in intermediate frames, onto a display (see paragraph 31, lines 14-18 of paragraph 30, "solution" section of abstract and Figure 6). Kato discloses using certain curve data points of the outline of an object of reference frames F1 and Fn to create the object in intermediate frames so that certain curve data points, An and Nn, correspond in all the frames F1-Fn (see paragraphs 31-35 and Figures 5-7). Kato does not explicitly disclose determining analogousness between a first

image portion including a correspondence point identified in the first frame and a second image portion including the correspondence point in the second frame by determining an absolute value sum of differences of respective pixel values within the first image portion and second image portion. Matsugu et al. discloses an image processing method for precisely and automatically detecting a specific image extraction region from an input image (see lines 1-3 of abstract). Matsugu et al. also discloses region matching processing of areas within a standard model image and a target image whereby a contour line is extracted based upon the absolute sum differences of RGB pixel values in the respective regions (see column 26-27, lines.56-23). Note, the office interprets the region matching processing of Matsugu et al. to perform substantially similar processing as the, determining of analogousness of first and second image portions based upon absolute sum differences of applicant's claims. It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the region matching processing of Matsugu et al. with the object outline processing techniques of Kato in order to provide a more accurate frame-by-frame outline detection scheme by stably, automatically and economically recognizing objects without being influenced by differences of the image size and/or position (see column 3, lines 10-15 of Matsugu et al.).

6. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kato (JP10-040395), Matsugu et al. (U.S. Patent 6,453,069 B1) and further in view of Ito et al. (U.S. Patent 5,966,141).

In reference to claims 12 and 13, Kato and Matsugu et al. disclose all of the claim limitations as applied to claims 3 and 8 respectively above. Although Kato discloses using certain curve data points of the outline of an object of reference frames F1 and Fn to create the

object in intermediate frames so that certain curve data points, An and Nn, correspond in all the frames F1-Fn (see paragraphs 31-35 and Figures 5-7), neither Kato nor Matsugu et al. explicitly disclose determining a length of a round portion of the curve in the first frame and a length of a round portion of the curve in the third frame. Ito et al. discloses a system and method creating an animation of shapes whereby the contours of shapes are matched and corresponded to each other between different frames (see lines 1-4 of abstract). Ito et al. also discloses the system comprising a corresponding contour detector that determines corresponding contour pairs in adjacent key frames (see column 31, lines 48-50). Ito et al. discloses the key frames to be frames comprising a topological change to an object (see column 5, lines 38-40). Ito et al. discloses the contour detector calculating arc lengths of upper and lower contours of an object in each key frame, F0 and F1 (see column 32, lines 55-58 and column 33, lines 34-36). Ito et al. further discloses determining other paired points using interpolation, defined by the function U(x), between the endpoints of the arc lengths (see column 33, lines 48-53 and #x0, x1 of Figure 38). Note, the office interprets the corresponding contour detection methods of Ito et al. to inherently disclose calculating a, "sampling interval" when performing interpolation as the interpolation function performs sampling within a certain range of points. It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the contour correspondence determining techniques of Ito et al. with the region matching processing and the object outline processing techniques of Kato and Matsugu et al. in order to provide correctly shaped objects for automatically created intermediate frames generating these frames using relatively easy hardware and simple user operation (see column 2, lines 41-47 of Ito et al.).

Response to Arguments

7. Applicant's arguments with respect to claims 1, 3-6 and 8-11 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Antonio Caschera whose telephone number is (703) 305-1391. The examiner can normally be reached Monday-Thursday and alternate Fridays between 7:00 AM and 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella, can be reached at (703)-308-6829.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

aac

2/26/04

Matthew C. Bella

MATTHEW C. BELLA
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